

# Complex Orebodies: The Role Of Social And Environmental Complexities In Current Mine Projects Development

*E. Lebre<sup>1</sup>, R. Valenta<sup>2</sup>*

1.  
Postdoctoral Researcher, Centre for Social Responsibility in Mining, Sustainable Minerals Institute, The University of Queensland, St Lucia, Queensland, 4072. Email: [e.lebre@uq.edu.au](mailto:e.lebre@uq.edu.au)

2.  
Professor, W.H.Bryan Mining & Geology Research Centre, Sustainable Minerals Institute, The University of Queensland, St Lucia, Queensland, 4072. Email: [r.valenta@uq.edu.au](mailto:r.valenta@uq.edu.au)

## ABSTRACT

The Complex Orebodies (COB) database project aims at evaluating the “complexities” faced by current mining projects in pre-production phases and the extent to which they act as a constraint to project development. Complex orebodies are those characterised by technical complexities (i.e. lower grades, deeper deposits, complex mineralogy etc.) but also environmental, social and governance (ESG) complexities. As ore grades decline and mining intensity increases, research suggests that ESGs are also becoming more prominent. Lower grades usually lead to an increase in energy consumption, water consumption, land use and waste generation, which in turn can lead to local community concern, conflict, permitting issues, and tightening of environmental regulations.

To start building the database, we chose to focus on the three main metals in use in society: iron, aluminium and copper. A main advantage of focusing on these three metals is that they present a priori very different profiles, e.g. their minerals are found in different orebody types, located in different geographical areas, and extracted through different processes. For each of these three metals, we take a detailed look at the 40 largest non-producing mining projects found in the S&P database. The objectives of this research project include: determining whether the top 40 projects are experiencing abnormal delays and difficulties, identifying the types of ESG complexities they are facing, and evaluating the correlation between these complexities and the potential delays. Another objective is to assess the completeness of S&P database and evaluate the potential gaps caused by a lack of disclosure from mining companies. The findings for copper show that 17 of the 40 projects analysed are experiencing significant delays. ESG complexities appear to play a key role in the projects' delays in 14 cases. The four most common complexities are: opposition from the local community, water resources issues, biodiversity and conservation, and permitting.